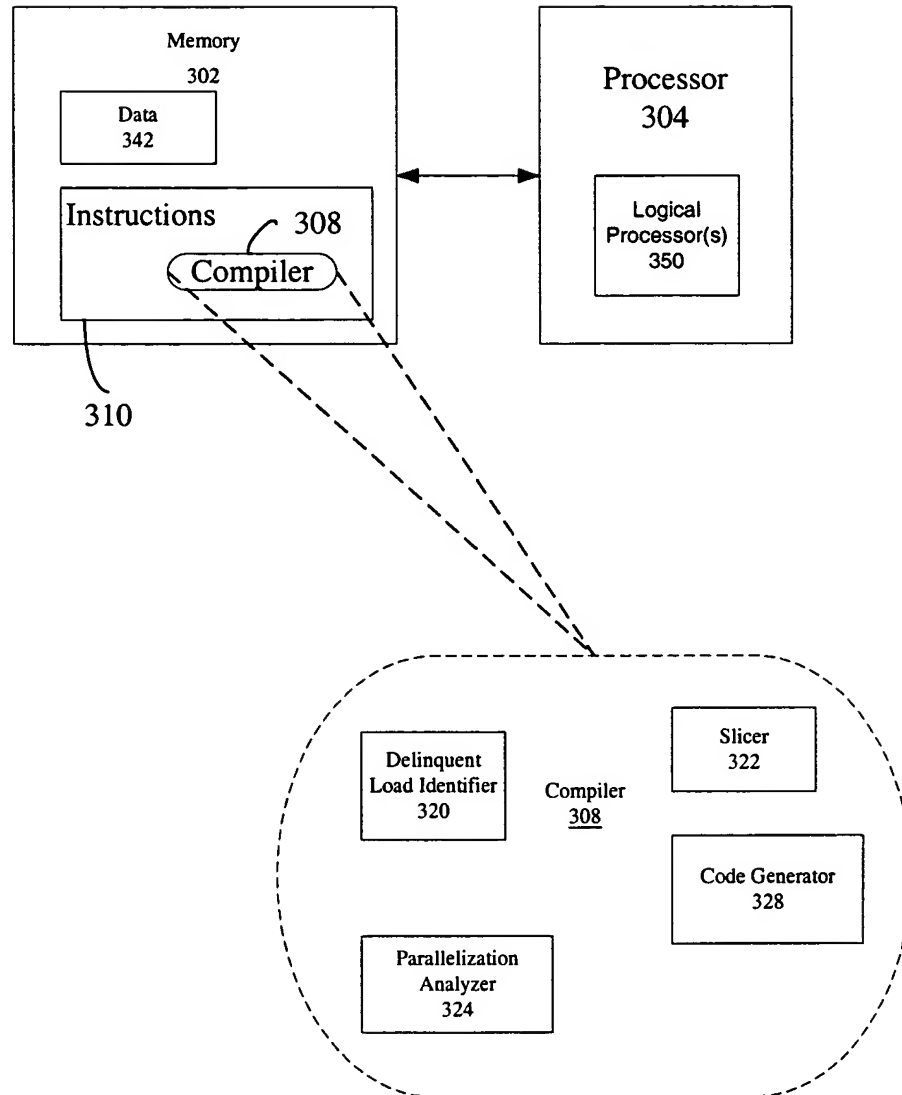


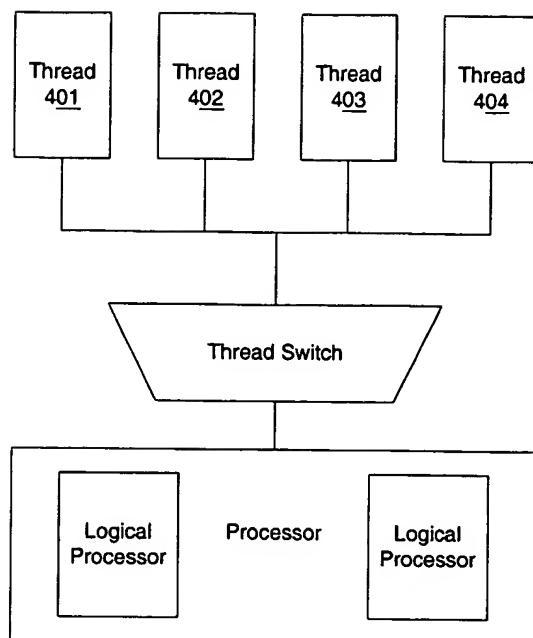
**Fig. 1**

### Fig. 2

300

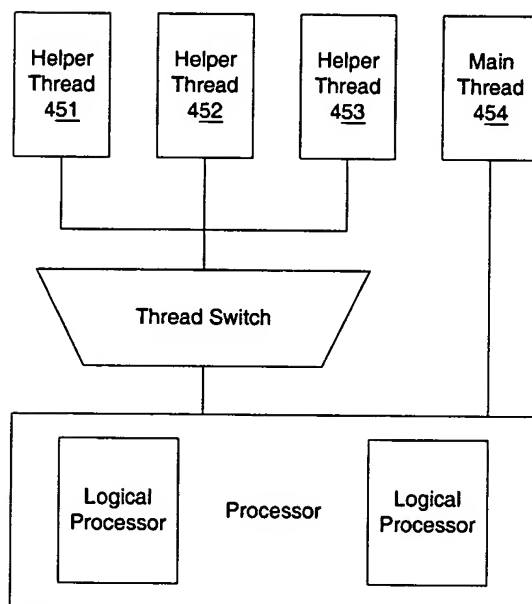


**Fig. 3**



400

**Fig. 4A**  
**(Prior Art)**



450

**Fig. 4B**

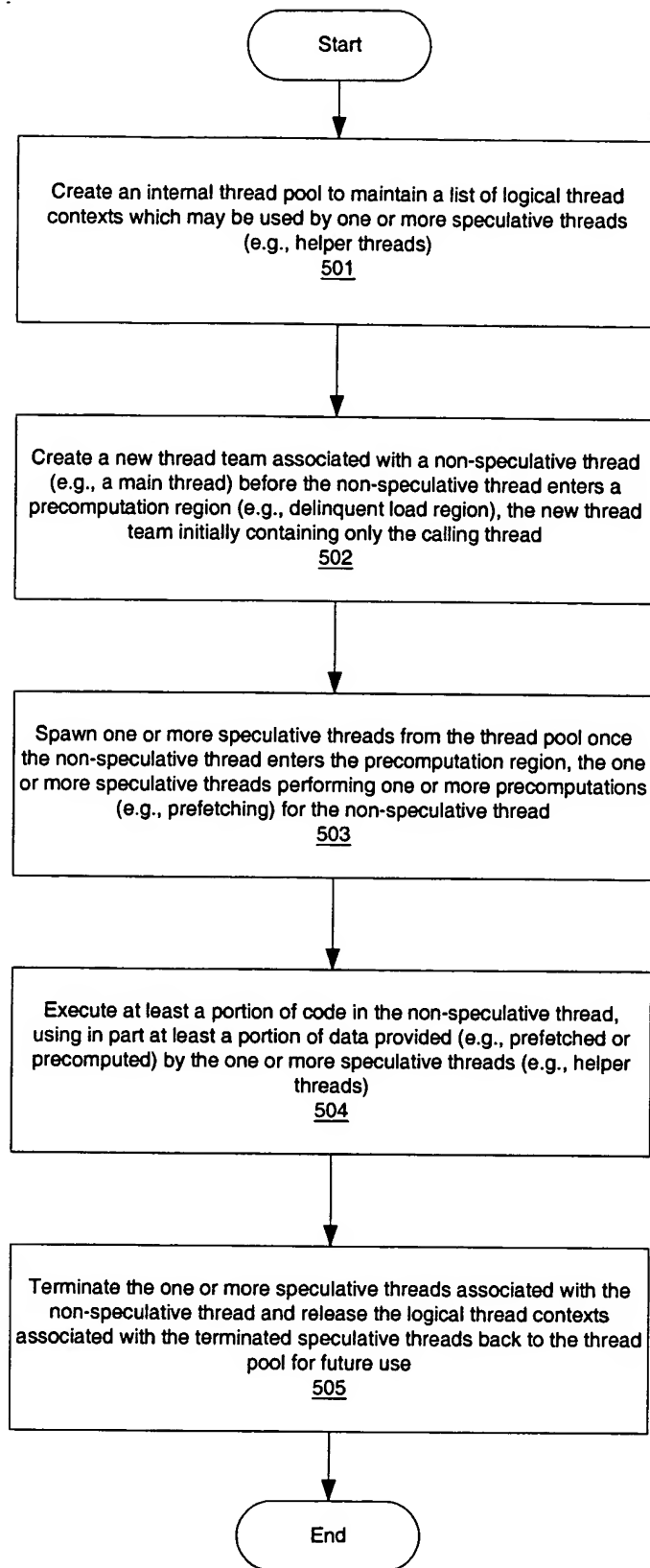
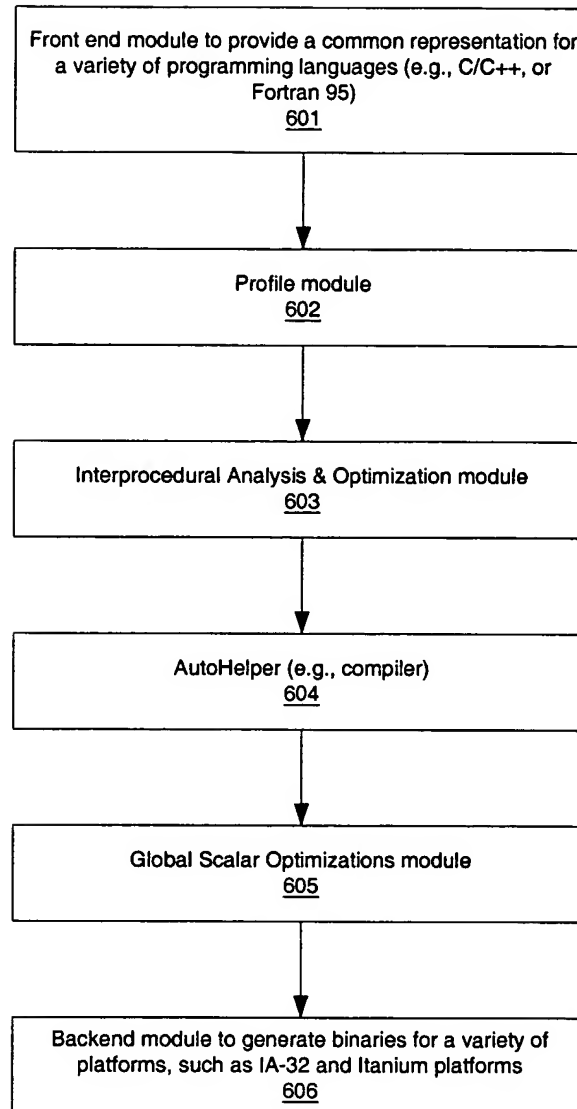


Fig. 5

600



**Fig. 6**

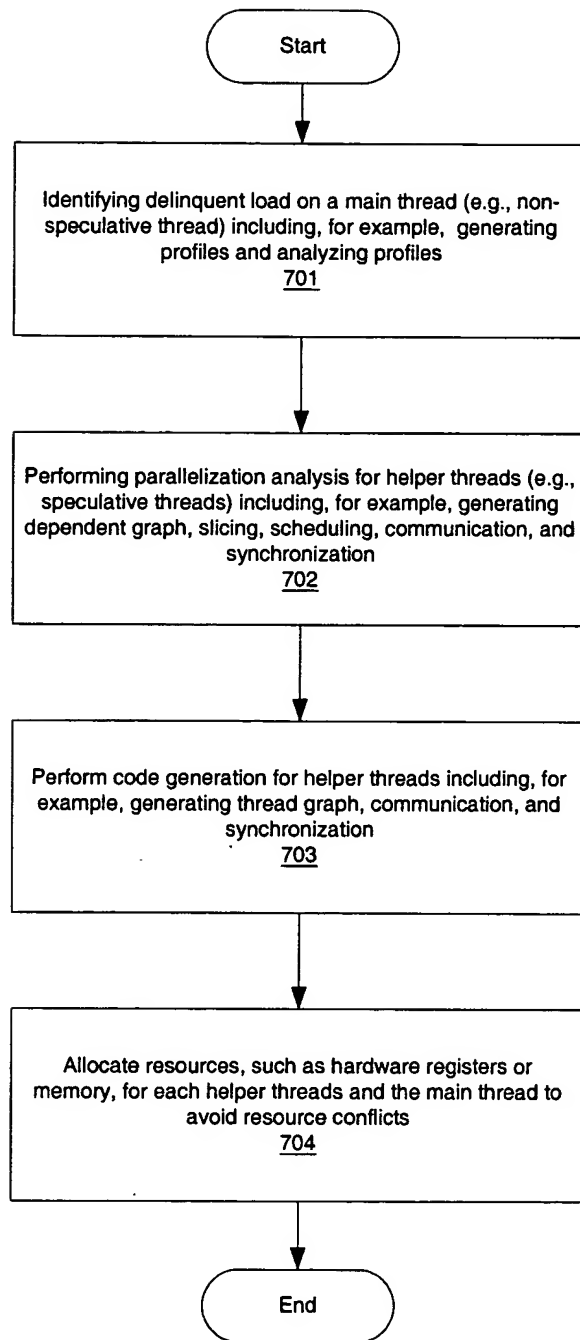
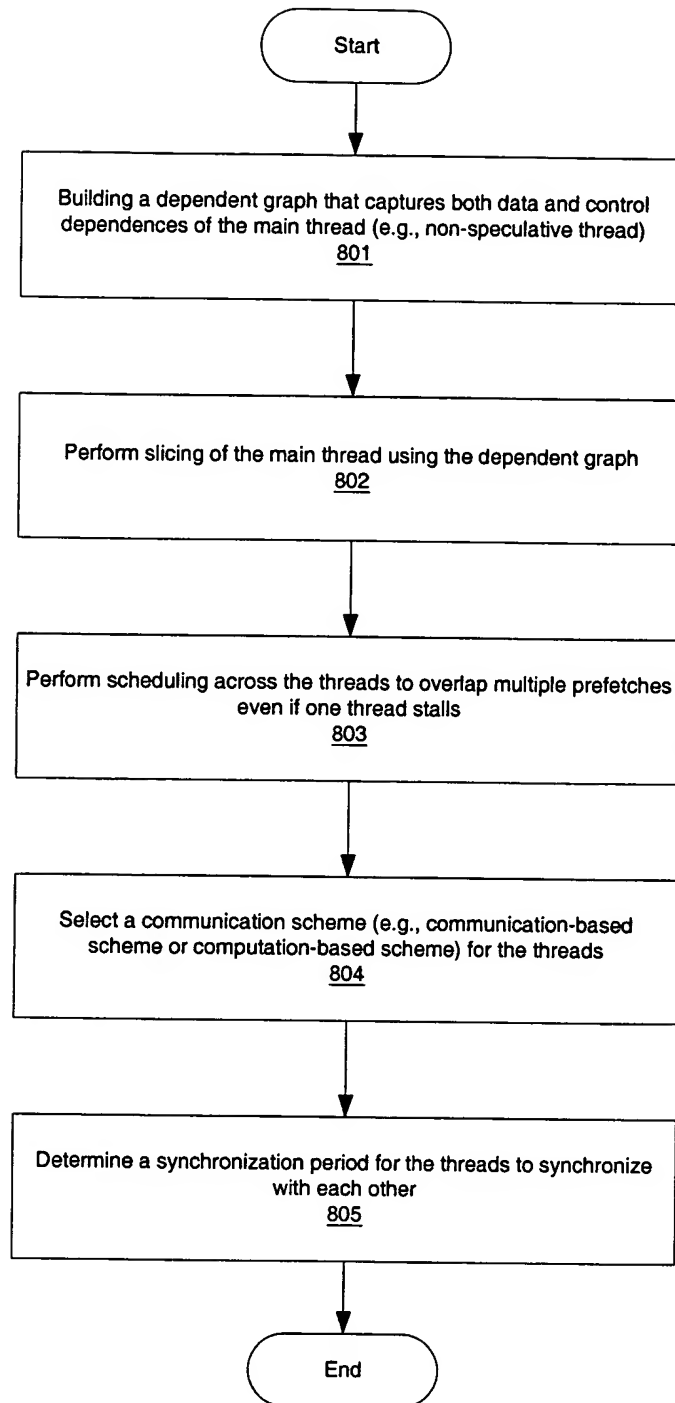


Fig. 7

800



**Fig. 8**



```

void foo_main(LIST *p)
{
    ....
    { while (p!= NUL:L) {
        ...
        do_work1(p->data1, 10);
        do_work2(p->data2, 20);
        ...
        p= p->next;
    }
}

```

(I) Serial code

901

**Fig. 9A**

```

void foo_main(LIST *p)
{ mc = X; M=1; _ssp_begin();
  _ssp_spawn_helper(... helper_foo, ...p...);
  while (p != NULL) {
    do_work1(p->data1, 10);
    do_work2(p->data2, 20);
    mc = mc + 1;
    if (mc > M*X) {
      M++; _ssp_post(helper_tid);
    }
    p= p->next;
  }
  _ssp_end();
}

```

(II) Main thread code

902

**Fig. 9B**

```

T-entry foo_helper: captureprivate(p)
{ hc = 0; H = 1; local_p = p;
  while (local_p!= NUL:L) {
    non_faulting_load(local_p->data1);
    non_faulting_load(local_p->data2);
    hc = hc + 1;
    if (hc > H*X && hc > mc)
    { H++; _ssp_wait(main_tid); }
    else if (hc <= mc) {
      (hc, local_p, H) = catchup(mc, p, M)
    }
    local_p = local_p->next;
  }
}
T-ret }

```

(III) Helper thread code

903

**Fig. 9C**

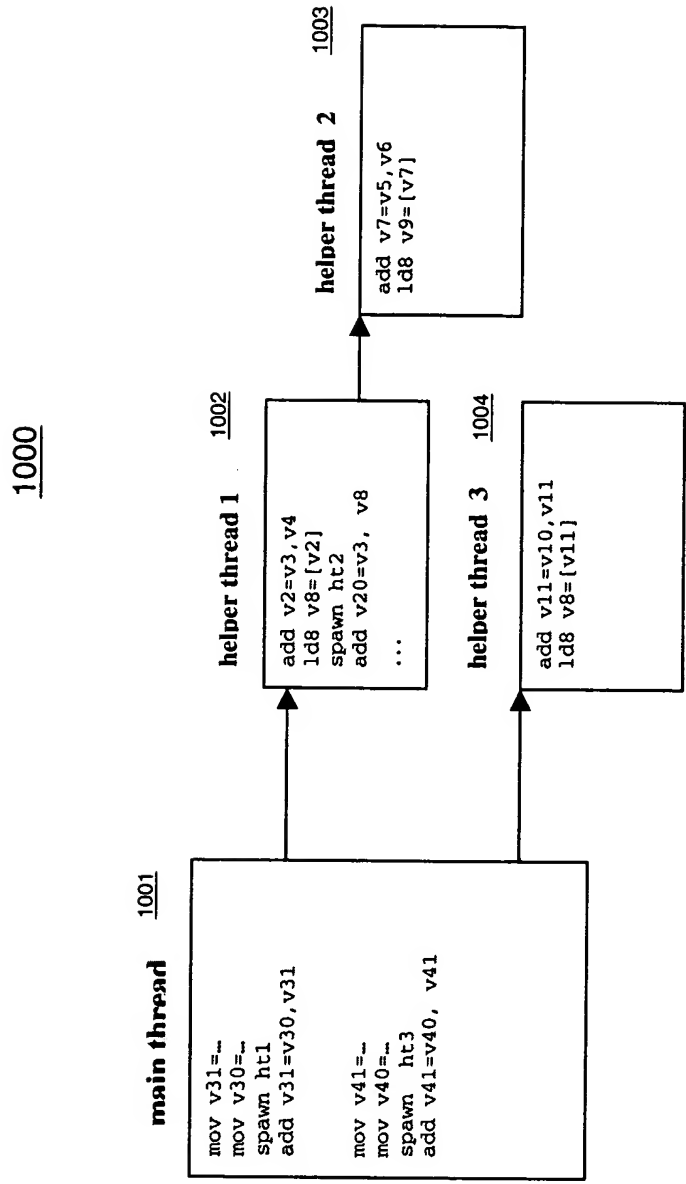


Fig. 10

1100

```
FOREACH THREAD CHAIN
  FOREACH THREAD IN BOTTOM UP ORDER
    READ_RESOURCE_TABLE_FOR_CHILDREN_THREAD();
    PREALLOCATE_REGISTERS();
    ALLOCATE_REMAINING_REGISTERS();
    WRITE_RESOURCE_TABLE ();
  ENDFOR
ENDFOR
1101

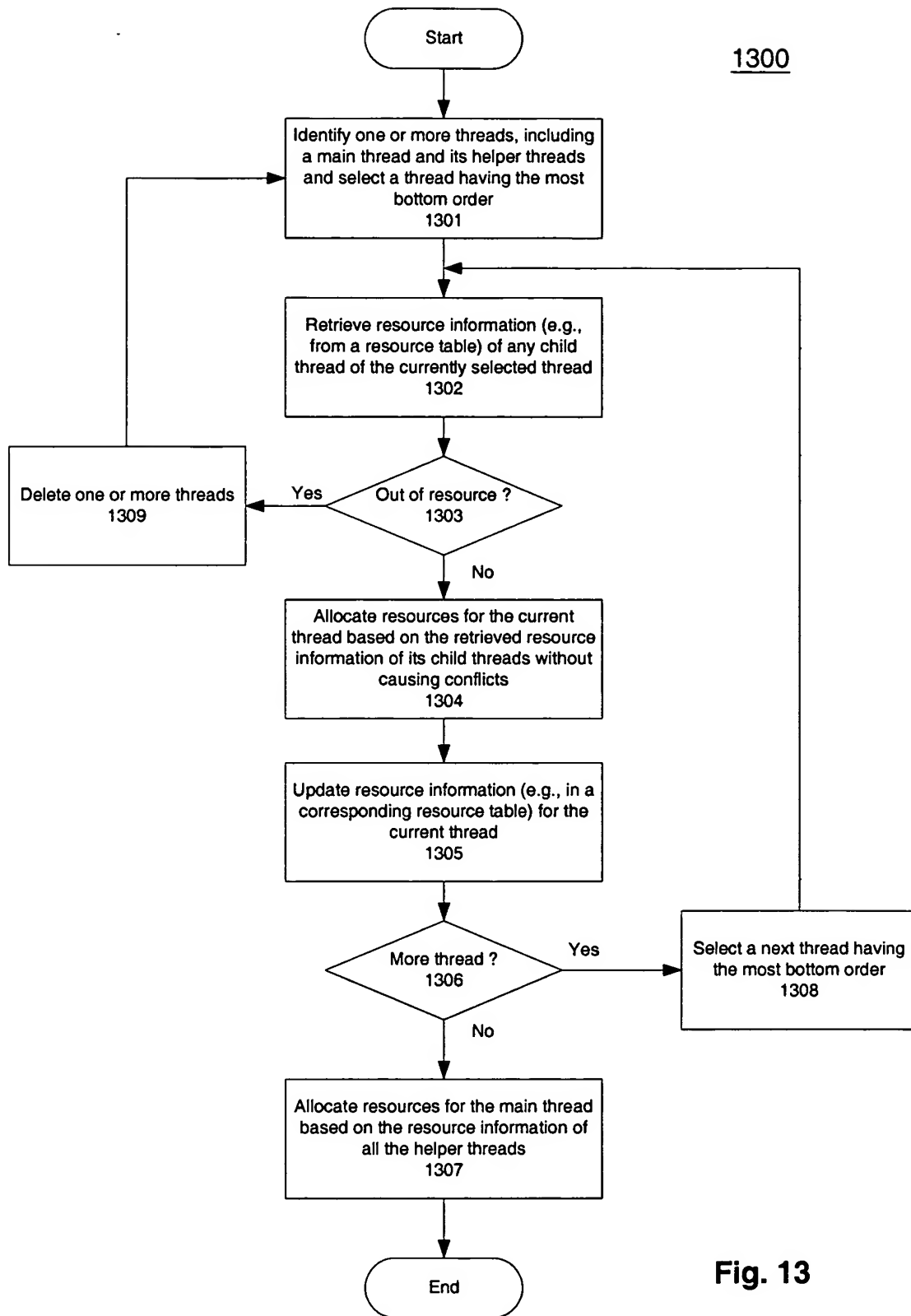
FOR MAIN THREAD DO
  READ_RESOURCE_TABLE_FOR_CHILDREN_THREAD_AT_EACH_SPAWN();
  PREALLOCATE_REGISTERS();
  ALLOCATE_REMAINING_REGISTERS();
  DONE
1102
```

**Fig. 11**

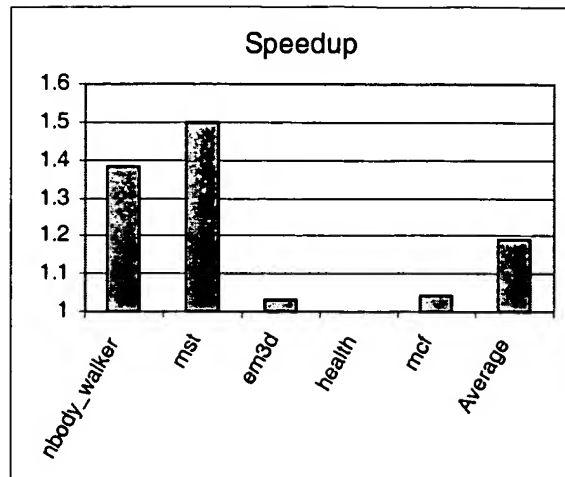
1200

Thread ID <u>1201</u>	Written Resources <u>1202</u>	Live-in Resources <u>1203</u>
Helper Thread 2	R4, R5	(V5, R2) (V6, R3)
Helper Thread 1	R2, R3, R4, R5, R8, R9	(V3, R6) (V4, R7)
Helper Thread 3	...	...
...	...	...
Helper Thread n	...	...
Main Thread	...	...

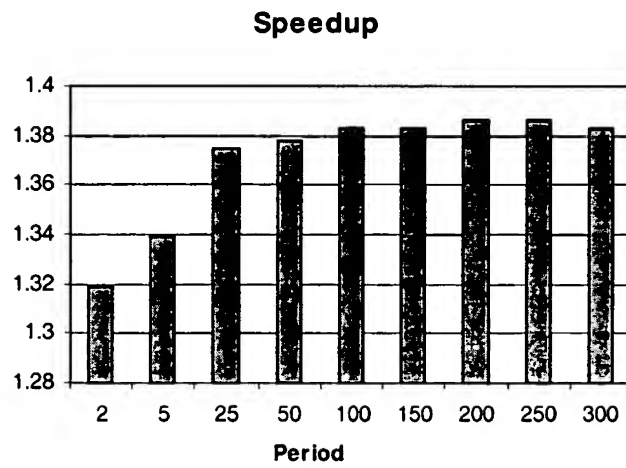
**Fig. 12**



**Fig. 13**



**Fig. 14A**



**Fig. 14B**

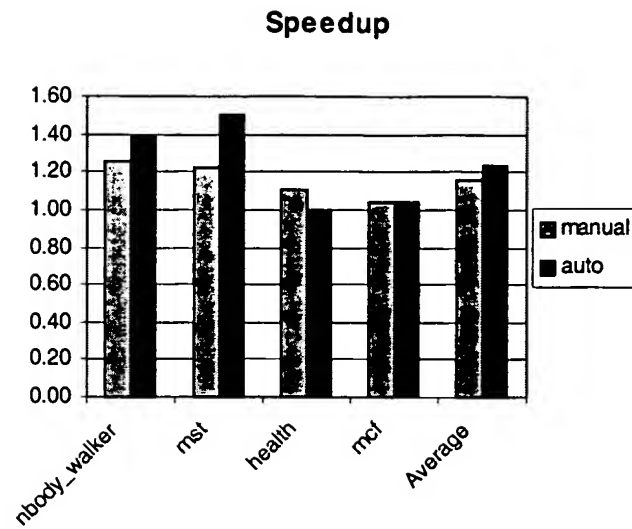


Fig. 14C

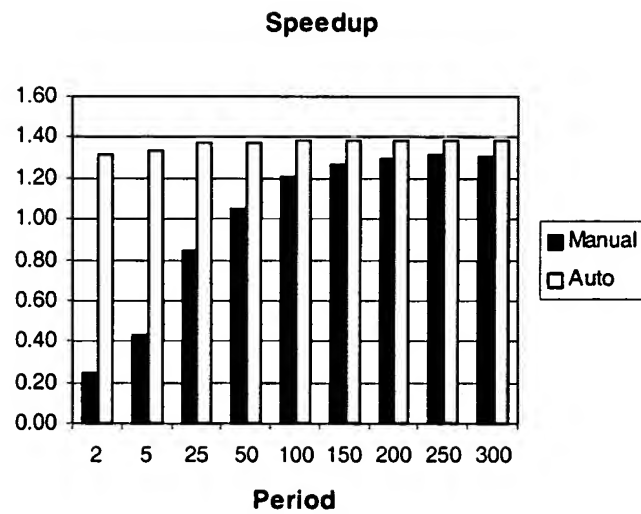


Fig. 14D